

# 2023 Groundwater Week Educational Programming

The most up-to-date information regarding Groundwater Week can be found at [www.GroundwaterWeek.com](http://www.GroundwaterWeek.com). The information contained herein is accurate as of 9/18/2023.

**Dates:** December 5-7, 2023

**Location:** Las Vegas Convention Center  
3150 Paradise Road  
Las Vegas, Nevada 89109

**Registration Rates:** *All rates are per person (in USD) and include workshops, exhibit hall, general sessions, and networking events.*

On/before November 3, 2023

- NGWA member— \$200
- Nonmember — \$350
- Student — full-time (ID required) — \$100

Starting November 4, 2023

- NGWA member— \$300
- Nonmember — \$450
- Student — full-time (ID required) — \$150

**Attendance:** Workshop attendance will be tracked via a mobile app. NGWA staff will scan participants into each session and/or participants can scan themselves in to the session using a unique QR code posted in the workshop room. NGWA will issue documentation in the form of a certificate following the event.

**Number of Hours:** Groundwater Week is hosting 46 separate workshop sessions. All workshops are 1-hour in length except for *Determination of Slot Size from Sieve Analysis Data* which is two hours. The maximum number of workshops a participant could attend would be 12 with the following daily breakdown:

- Tuesday, December 6: Six
- Wednesday, December 7: Three
- Thursday, December 8: Three

## **Post Conference On-Demand Option:**

Workshop Sessions at Groundwater Week will be recorded and posted on NGWA's Learning Center to be purchased and on-demand workshops. <https://www.pathlms.com/ngwa> On-demand workshops will be available in January 2024. Course content for the on-demand workshops will be exactly the same as the in-person workshops.

On-Demand Registration rates: *All rates are per course (in USD).*

- NGWA member— \$35
- Nonmember — \$55

All on-demand courses are one hour in length. Courses are set so the full lecture must be watched. At completion of the course, participants will be required to complete an online assessment. A certificate will be issued after successfully completing the assessment. All courses are one contact hour except for *Determination of Slot Size from Sieve Analysis Data* which is two hours.

The following pages contain each workshop's course name, instructor(s) name & biography, date, time, and location.

**Date:** Tuesday, December 5

**Time:** 08:00 AM - 09:00 AM

**Room:** N115/N117

**Category:** Water Systems

**Title:** Ultraviolet 101 - UV for Domestic Water Wells

**Course Description:** The implementation of Ultraviolet (UV) equipment at the point of entry for private well owners is becoming increasingly common. However, even after 100 years of effective application there are still industry gaps as it relates to effective pretreatment, sizing, and installation. This workshop will review the critical parameters of water and the impact on the performance of a UV system, the fundamentals of UV dose and how the calculation of time and intensity are adjusted when sizing. In support indicator organisms and common pathogens will be reviewed as well as the varying UV doses required for inactivation followed by a review of installation and service best practices for long term implementation.

**Presenter:** Tony Oosterveld, Trojan Technologies

**Presenter Biography:** Anthony D. Oosterveld's career in the water treatment industry began 20 years ago as a production associate with R-Can Environmental Inc. (acquired by Trojan Technologies in 2009). Since then, he's held various roles within the organization's operational teams, service, sales, and is currently the Sr. Market Manager for Residential & Industrial systems. Anthony is a passionate advocate of protecting public health from waterborne illness and works closely with regulatory bodies in the adoption of ultraviolet technology within small and remote public drinking water systems. In 2020 he was the recipient of the International Award of Merit from the Water Quality Association.

**Date:** Tuesday, December 5

**Time:** 08:00 AM - 09:00 AM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Casing Advancement 101

**Course Description:** Attendees of Casing Advancement 101 will learn about modern DTH casing advancement systems as well some history. We will focus on the 2 main types; underreamers and ring bit systems. I will discuss standard operating procedures including air requirements, rotation speeds and weight on bit. We will go over the best practices for welding drive shoes and ring bit assemblies to the casing, maintaining the tools as well as the complete system set up from device to the swivel.

**Presenter:** Justin Lewis, Mitsubishi Materials USA- Rock Tools Division

**Presenter Biography:** Justin is the Casing Advancement and DTH Product Manager for Mitsubishi Materials USA- Rock Tools Division. He started in the drilling industry in 2003 as a delivery driver at Bill Johnson Equipment in Phoenix, AZ. In the 20 years Justin has been involved in the drilling industry, he has managed projects covering many different drilling styles including air rotary, DTH, casing advancement, mud rotary, reverse circulation, wireline coring, sonic, auger, HDD and cable tool. He has performed in person training across the US and has specialized in casing advancement and DTH tooling for the past 15 years. Justin prides himself on his customer service and problem solving skills.

**Date:** Tuesday, December 5

**Time:** 08:00 AM - 09:00 AM

**Room:** N219/N222

**Category:** Safety & Compliance

**Title:** Respirators and the Hazards of Silica

**Course Description:** Silica is a danger that exists in both the drilling and pump installation industry. We will discuss what silica is and talk about the infamous Hawk's Nest Tunnel tragedy. Silica is all around us, especially in our industry. We will discuss the regulations around silica including exposure limits and what they really mean. From there we will move into how to protect yourself from the dangers of silica with respirators - both N95 and half face respirators. We will review what is required before you can wear a respirator, how to inspect them, how to properly don them, and finally the critical procedure of how to store them. Silica is often overlooked, but is a real hazard that exists in our industry that we need to understand.

**Presenter:** John Fowler, National Exploration Wells & Pumps

**Presenter Biography:** John Fowler is a father of three, a Safety Manager for National Exploration Wells and Pumps, a Certified Safety Professional (CSP) and a Certified Mine Safety Professional (CMSP). John graduated from Dartmouth College in 1999 with a B.A. in History and began his drilling career in 2001 in the Prudhoe Bay, Alaska oilfield on a deep exploration oil rig. From there he went to drill on scientific ice drilling projects in locations ranging from the U.S. South Pole Station in Antarctica to the ice pack at the geographic North Pole to a project in Greenland. In 2011 John became a safety professional working on drilling projects in both surface and underground mines. John is a regular contributor to the Water Well Journal and regularly speaks on drilling safety topics.

**Date:** Tuesday, December 5

**Time:** 8:00 AM - 9:00 AM

**Room:** N223/N226

**Category:** Motor Symposium Part 1

**Title:** Select the Right Submersible Motor to Power Your Pumping System: How Different Designs Impact Operations

**Course Description:** No pumping system is complete without the right motor. It not only drives the pump, but it also safely and reliably takes the static and dynamic loads from the hydraulic stresses of the entire system. No matter how many motors you have selected and serviced throughout your career, every pumping job is different. During this session, participants will take a closer look at the primary components that are part of a submersible motor design. We will look at how these components address different application requirements – including overall efficiency, reliability, and ability to repair or replace.

**Presenter:** Andrew Buuck, Franklin Electric

**Presenter Biography:** As Franklin Electric's Senior Product Manager of Vertical Pumping Systems for the US & Canada groundwater industry, Andrew Buuck focuses on all aspects of the product life cycle for submersible pumps, motors, and vertical turbines. Among his previous roles, Andrew spearheaded product management initiatives for Asia Pacific, giving him a unique perspective on water systems for the domestic and international markets. With over 15 years of experience in these roles, Andrew brings vast knowledge across a wide range of groundwater products.

**Title:** Unleashing Efficiency: Exploring the Potential of Permanent Magnet Motors in the Water Well Industry

**Course Description:** As the water well industry seeks optimal solutions, permanent magnet motors have emerged as a promising choice. Their remarkable efficiency surpasses that of conventional induction motors, resulting in substantial energy savings and cost reduction. However, before choosing this motor for your next project, it is essential to consider certain factors. In this presentation, we will delve into the design aspects of permanent magnet motors, examine the necessary controls, and explore practical examples of cost savings. By doing so, we aim to shed light on the ideal applications where this innovative technology truly shines.

**Presenter:** Scott Byfield, Grundfos

**Presenter Biography:** Scott is a Market Development Manager for Grundfos with a focus on digital products. Scott began his career in the industry working for a prominent water well drilling and pump company in the Southeast US. Scott has a Master of Science in Geology and a strong interest in physics and engineering.

**Date:** Tuesday, December 5

**Time:** 09:30 AM - 10:30 AM

**Room:** N115/N117

**Category:** Business Management

**Title:** Navigating the Build America, Buy America Act

**Course Description:** The Build America, Buy America Act was included within the 2021 Infrastructure Investment and Jobs Act, commonly referred to as the “Bipartisan Infrastructure Law”. Its purpose is to impose a baseline “Buy America” requirement on all infrastructure projects receiving federal financial assistance. The U.S. Office of Management and Budget issued initial guidance on how to comply with the law in April 2022, but there are still many unresolved questions on exact requirements and how individual government offices (DOE, EPA, DOT, USDA) will enforce. Session attendees will learn what requirements are defined and what is still not clear, how to determine where in the supply chain they sit and most importantly, what questions to ask.

**Presenter:** Patrick Hogg, Nidec Motor Corporation

**Presenter Biography:** Mr. Hogg is the Director of Marketing at Nidec Motor Corporation. He received his Bachelor’s Degree in Mechanical Engineering from Southern Illinois University and his MBA from the University of Missouri-St. Louis. Mr. Hogg has over 15 years of experience in the motor and pump industry. He is an active member of Hydraulic institute, and is active with NEMA and other industry organizations, specifically on the topic of government regulations.

**Date:** Tuesday, December 5

**Time:** 09:30 AM - 10:30 AM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Drilling Basics - Break Down of Basics and All the Questions You Want Answered

**Course Description:** This workshop is a collection of technical topics that will help the driller understand the question of why in drilling basics. It will be a live interactive presentation that new drillers and experienced drillers alike can take something away from. We will cover the types of drilling and how or why you might need to use mud or air to grow your business. A section will cover wellbore design for different hole sizes. A look at the math behind finding the right uphole velocity. Our best recommendations on safety and maintenance for

your equipment. We will touch base on different formations and what can help hold your hole open. A troubleshooting guide to fluids and a look at support equipment that will make your jobs easier and more proficient. The last sections will take a look at drill string make ups and the hydraulic components of the drilling rig.

**Presenter:** Katy Anderson, Drilling Equipment Resources

**Presenter Biography:** Katy Anderson is the VP and CFO of Drilling Equipment Resources. She has been with the company for over 8 years and travel to over 20 water well related shows. Her passions lie in small business and she loves helping customers grow their businesses.

**Date:** Tuesday, December 5

**Time:** 09:30 AM - 10:30 AM

**Room:** N219/N222

**Category:** Business Management

**Title:** The Institutional Market and the Value It Presents to the Geothermal & Drilling Industry

**Course Description:** Geothermal technology is finally being recognized as a valued asset by the Federal market because of the modification of the definition of renewable energy to include thermal energy and changing the verbiage from generated to produced. This along with the "Climate Change" narrative should have opened the flood gates for this technology but we are still having to fight the lack of awareness for not only the technology but more importantly the benefits that these systems bring to the table. This session will point out the magnitude of the institutional market and the steps that can and should be taken by the various members of our industry to promote the adoption of GHPs. I will show how this initiative will not only increase awareness of this technology but also support networked geothermal and be the catalyst for increased adoption by the residential sector.

**Presenter:** Jack DiEnna, Geothermal National & International Initiative

**Presenter Biography:** As the Executive Director & Founder of the Geothermal National & International Initiative (GEO-NII) and the Principal of Indian Rock Associates LLC. I am a business development and marketing professional with over forty years combined experience in the electric utility industry and the geothermal heat pump industry. I am a nationally recognized authority on geothermal heat pumps (ghp), including marketing, creative financing, and the resulting positive economic and environmental impact that can be derived from the use of this renewable technology. My expertise is internationally acknowledged as a valued resource by government officials, both national and international, trade allies, and all major market segment associations in the promotion of geothermal heat pumps and other renewable technologies.

**Date:** Tuesday, December 5

**Time:** 9:30 AM - 10:30 AM

**Room:** N223/N226

**Category:** Motor Symposium Part 2

**Title:** Motors - Understanding How and Why They Fail, Testing, and Solutions

**Course Description:** We take motors for granted, either they work, or they do not. But is that really the entire story? Understanding above ground pumps or submersible pumps leads to understanding the other. It is first instinct to evaluate a submersible before pulling it, should you not evaluate an above ground as well? In this session, learn how to evaluate the motor, and what the numbers mean to the pump and to the system. Learn how motor issues can be foreseen and prevented using technology. See the importance of controls and

safeties to the life of the motor and system This talk will take you beyond the how to evaluate the motor and explore what the tests can really be telling you and what solutions are available.

**Presenter:** Daniel Featherstone, Pentair Flow Technologies

**Presenter Biography:** Dan has been working with Pentair for over 23 years and training for over twenty. Experience includes a variety of pumps from the standard centrifugal and submersibles to vertical multistage and vertical line shaft turbines and more. This includes residential, commercial, and agriculture installations and variable frequency drives. Dan also has experience in sump, sewage, and effluent pump and applications. Much of Dan's experience has been learned firsthand growing up on the family farm where he still lives in Walworth Wisconsin with his wife of 31 years and one son. Dan holds a bachelor's degree in business management. Training experience ranges from classroom training as well as webinars and e-learning.

**Title:** Motor Protection

**Course Description:** Discuss the need to protect motors and VFDs from surges, the need for a good ground to route the transients, what an acceptable ground resistance is, how to measure ground resistance, and how to improve ground resistance. Discuss other causes of motor failures including dry run, excessive cycling (including those operating on VFDs), and current imbalance. Show power curves and actual lab testing of pumps causing motors to run at currents exceeding the maximum current rating of the motor and how to protect the motor from those excessive currents. Wrap up by discussing the spikes caused by the VFD and the different types of filters to protect the motor.

**Presenter:** Mike Farrar, Preferred Pump & Equipment

**Presenter Biography:** National Product Manager at Preferred Pump. BSEE from University of Texas at Arlington. Before coming to Preferred Pump, I worked at Federal Pacific Electric Company, Eaton- Cutler Hammer, and Teccor Electronics in both Engineering and Sales roles.

**Date:** Tuesday, December 5

**Time:** 11:00 AM - 12:00 PM

**Room:** N115/N117

**Category:** Business Management

**Title:** Groundwater Equipment Financing

**Course Description:** This presentation is designed to help the listener better understand how to make wise financial decisions when acquiring capital equipment. We will discuss the pros and cons of financing versus paying cash, as well as the different types of equipment financing commonly available in the market today. The presenter will briefly explain the different types of commercial equipment lenders, and give an overview of the financial documents lenders frequently request from companies applying for credit. This presentation will encourage the listener to think about what is best for their business when it comes time to acquire expensive capital equipment.

**Presenter:** Mac Nehring, Civista Leasing & Finance

**Presenter Biography:** Mackenzie "Mac" Nehring is a Sales & Marketing Associate for Vision Financial Group, Inc (VFG Leasing & Finance). He specializes in equipment financing for various niche markets including Construction, Manufacturing, and Drilling (Groundwater, Geotechnical, Environmental, Geothermal, and Foundation). Previous to his current position with VFG, Mac spent 5 years managing local bank branches in the greater Nashville area.

**Date:** Tuesday, December 5

**Time:** 11:00 AM - 12:00 PM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Loss Circulation - Facts, Treatment and Proper Development

**Course Description:** Loss Circulation while drilling is becoming more problematic with the increased drawdown in our aquifers and one of the least understood borehole conditions the driller encounters. Proper steps are needed to minimize the risk of getting pipe stuck. Recognizing the type of losses that occur and the correct treatment is critical to prevent aquifer contamination and reduced well efficiency. The presentation will cover types of approved loss circulation materials and steps necessary to develop these materials out of the well during well development.

**Presenter:** Fred Rothauge, Hydro Resources

**Presenter Biography:** Fred Rothauge has been in the Drilling and Drilling Fluids Engineering business for over years. He is a licensed water well driller in eight western states, past president of the Colorado Water Well Contractors Association, and current NGWA and The Groundwater Foundation board member. He has coauthored papers on drilling fluid products and is a coauthor for Johnson Screens' third edition of "Groundwater and Wells". Rothauge also serves on the board for the Mountain States Ground Water Association and is chairman of the American Ground Water Trust. He oversees drilling fluids and well rehabilitation along with serving as technical advisor for Hydro Resources.

**Date:** Tuesday, December 5

**Time:** 11:00 AM - 12:00 PM

**Room:** N219/N222

**Category:** Drilling Operations & Well Construction

**Title:** Case Studies in Designing and Installing Geothermal Systems: Treasure Island Commercial Electrification and NGWA HQ

**Course Description:** The ground source heat pump industry has experienced a surge in activity following the recent extension of geothermal tax credits for both residential and commercial sectors, which were enacted in 2022. Given that geothermal systems involve more complexity than standard water wells, it is crucial for groundwater professionals to receive proper education to grasp the necessary requirements. In this session, speakers from the National Ground Water Association (NGWA), International Ground Source Heat Pump Association (IGSHPA), Salas O'Brien, and Bergerson-Caswell will share valuable insights gained from testing, designing, and constructing two recent geothermal projects. The presentation will shed light on the distinctive features, outcomes, and challenges encountered by the design and construction teams in successfully implementing open loop systems. The session will focus on the following projects: Treasure Island Resort and Casino Project: This landmark initiative, Treasure Island Resort and Casino became one of the nation's largest establishments to adopt an open-loop ground source system (pump and reinject) for their heating and cooling needs. By providing a roadmap for other large-scale facilities across the country, this unique electrification project aims to inspire innovative energy reduction and carbon emission mitigation strategies. NGWA Headquarters Building: NGWA and IGSHPA representatives and members collaborated on upgrading the existing HVAC system at NGWA's 38,000 square foot headquarters building. The new system is expected to enhance energy efficiency, promote environmental sustainability, and yield long-term cost savings for NGWA. By examining these projects, attendees will gain valuable insights into the design, construction, and operational aspects of successful geothermal installations, fostering knowledge exchange and encouraging the adoption of sustainable heating and cooling systems.

**Presenter:** David Henrich, Bergerson-Caswell Inc

**Presenter Biography:** Mr. Henrich started working for Bergerson Caswell in 1993. During the course of his service Mr. Henrich has gained experience in many areas of water well drilling, pump installation, environmental drilling and sampling, and geothermal design and construction. Currently, Mr. Henrich is the President of Bergerson Caswell, is the president of Thermal Dynamics, and is a vice-president at Precision Geothermal. His responsibilities include managing the operations of three companies, designing geothermal systems, managing and training personnel, implementing the procedures for constructing ground source systems, software technical support, sales and marketing.

**Date:** Tuesday, December 5

**Time:** 11:00 AM - 12:00 PM

**Room:** N223/N226

**Category:** Water Systems

**Title:** Understanding Meters and Meggers When Testing Submersible Motors

**Course Description:** This course outlines exactly how to use a multimeter to determine if a motor is shorted, grounded or has open windings or mixed leads. Resistance ohm values will be discussed in depth. Additionally, the proper use of a megohmmeter for the purpose of determining the insulation conditions of the drop cable, motor lead, and motor windings will be evaluated as they will degrade over time. The content will be shared in a manner that makes retention easier.

**Presenter:** Dan Painter, Flint Walling Inc.

**Presenter Biography:** Dan has been involved in the water systems industry since the mid-70's. His career path has included work as a contractor, wholesale distribution and manufacturing. Over the course of time, He has conducted hundreds of training classes and CEU courses for contractors, distributors, and various state, regional & national associations. As a former CSP, his classes are educational, motivational and entertaining. As his career begins to wind down, Dan is now a full-time Product Training & Development Manager for Flint & Walling.

**Date:** Tuesday, December 5

**Time:** 01:15 PM - 02:15 PM

**Room:** N115/N117

**Category:** Water Systems

**Title:** Emerging Contaminants in Drinking Water and Effective Treatment Technology Tools

**Course Description:** The list of drinking water emerging contaminants continues to expand at an amazing pace; unbridled by concentration detection limits. Guidance will be shared regarding this class of contaminants, their nuances and the efficacy of the ever-expanding treatment technology landscape. The course provides opportunity for participants to expand their water treatment tool kit of knowledge to better serve their community of customers.

**Presenter:** Richard Mest, AO Smith Water Treatment NA

**Presenter Biography:** Director of Special Programs for AO Smith Water Treatment NA since Master Water Conditioning was acquired by AO Smith in 2021. In the industry since 1978. WQA serves as Past President, Immediate Past President of the WQRF Board of Director, WSC Board of Director/Past President, OGWA Board



of Director and NGWA's "PFAS Steering Committee". Served on the original National Sanitation Foundation task force that developed NSF/ANSI standard 44. Serves on many water industry committees where he guides policy, government affairs, consumer outreach and technical advancement. An avid educator and authored many technical articles on water treatment technology. Water Quality Association's "Award of Merit", "Key Award", "Lifetime Membership Award" and "Hall of Fame Award". The EWQA "Hall of Fame Award" and the WQP 2022 Industry Icon Award.

**Date:** Tuesday, December 5

**Time:** 01:15 PM - 02:15 PM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Sonic Drilling - The Future Is Now

**Course Description:** Sonic drilling is an advanced drilling technique that has gained significant attention in the field of geotechnical engineering and exploration. This innovative method utilizes high-frequency vibrations to efficiently penetrate various types of soil and rock formations, offering numerous advantages over conventional drilling techniques. This presentation aims to provide an overview of sonic drilling, highlighting its key principles, equipment, and applications. The fundamental principle of sonic drilling involves the generation of high-frequency vibrations, which are transmitted down the drill string to the drill bit. These vibrations effectively reduce the frictional resistance between the drill bit and the formation, allowing for rapid and efficient penetration. This presentation will explore various applications of sonic drilling, such as geotechnical site investigations, environmental assessments, mineral exploration, and geothermal energy projects. Case studies and real-world examples will be discussed to demonstrate the effectiveness and efficiency of sonic drilling in different contexts. Sonic drilling is a cutting-edge technique that revolutionizes traditional drilling practices. Its ability to minimize sample disturbance, increase drilling speed, and accommodate various geological conditions makes it a valuable tool for geotechnical engineers, environmental consultants, and researchers involved in subsurface investigations and exploration projects.

**Presenter:** Will Keyes, Griffin Dewatering

**Presenter Biography:** Will Keyes has been firmly focused on the groundwater industry for over a decade. He is a National Groundwater Association Certified Well Driller as well as a licensed well contractor in several states. Will has helped to develop sonic drilling programs and processes with different companies during his career that have led to their long-term success in the drilling and environmental remediation marketplace.

**Date:** Tuesday, December 5

**Time:** 01:15 PM - 02:15 PM

**Room:** N219/N222

**Category:** Drilling Operations & Well Construction

**Title:** Building Blocks of Training a New Driller

**Course Description:** This workshop will outline the fundamental steps to training a new driller. We will start with expectations of an assistant driller and what they need to learn and develop utilizing NGWA University before stepping up and taking control of the rig. Next, in developing the driller portion, designing operating procedures and choosing projects that maximize suitable learning environments will be discussed. The workshop will conclude with a discussion on how to allow new drillers room for growth through mentorship and trust.

**Presenter:** Brock Yordy, The Driller - Venture Drilling Supply - MGWA - NGWA - IGSHPA - Geothermal Rising - NY GEO

**Presenter Biography:** Brock Yordy is a 3rd generation driller and an industry educator. He has worked as SME and drill trainer on water and geothermal drilling projects worldwide for large companies, NGOs, and the US Military. His passion is sharing knowledge and inspiring men and women to join the drilling industry. Brock accomplishes that by writing, teaching, training, and broadcasting. You can find his work at Driller.com in Ask Brock, The Driller Newscast, and multiple podcasts.

**Date:** Tuesday, December 5

**Time:** 01:15 PM - 02:15 PM

**Room:** N223/N226

**Category:** Water Systems

**Title:** Renewable Energy Pumping

**Course Description:** In this session we will discuss renewable energy based pump technology. We will discuss current technology and touch on developing technology, specifically with solar power. Along with the technology overview, we will dive into specific pumping applications and markets where this technology can be applied. We will discuss power blending technology that allows use of solar power and can be supplemented by grid power for 24 hour per day pump operation. Energy savings and ways to calculate that savings will be addressed. Attendees will leave with an understanding of current renewable energy pumping systems and how these can be applied in groundwater applications.

**Presenter:** Alan Bixler, Grundfos Pumps

**Presenter Biography:** Alan Bixler is Field Sales Manager for the SE Region at Grundfos Pumps. Alan has been with Grundfos for 16 years in multiple technical roles. In his current role he supports Grundfos' distribution partners and contractors with application and technical knowledge of Grundfos products in water systems and irrigation.

**Date:** Tuesday, December 5

**Time:** 02:45 PM - 03:45 PM

**Room:** N115/N117

**Category:** Well Maintenance & Rehabilitation

**Title:** Uses of Chemicals for Restoring & Maintaining Performance of Water Wells

**Course Description:** This workshop will focus on the economic and environmental benefits of well rehabilitation, causes of well yield decline and how to properly diagnose the problem. It will discuss the different chemicals that can be used to rehabilitate and maintain a water well. It will contrast the use of custom chemical blending versus the use of "off the shelf" or proprietary chemical blends. It will consider how chemical use in water wells can be beneficial, yet if used improperly, can be dangerous. It will cover different mechanical tools and methods used in well cleaning and how these tools can be used in conjunction with properly designed chemical blends to achieve maximum desired results. It will examine chlorine, the most misunderstood chemical in the ground water industry and why such a common chemical can be a great tool, yet so very dangerous. And finally, it will cover the importance of preventive maintenance and why the industry should be promoting it.

**Presenter:** Kevin McGinnis, Cotey Chemical Corporation

**Presenter Biography:** Kevin graduated from Texas Tech University in 1984 with a degree in Business. His career in the groundwater industry began when he started working at Cotey Chemical 1993; eventually buying the company in 1995. Founded in Lubbock, Texas, in 1949, Cotey Chemical Corporation designs and manufactures products to rehabilitate and develop all types of water wells. Kevin has, therefore, worked in the water well remediation industry for 30 years and has presented workshops across the United States both for state organizations and for the American Groundwater Trust. Kevin is a Board member of the Manufacturing Division of the NGWA, Chairman of the Board of the American Ground Water Trust , and been a member of National Ground Water Association and the Texas Ground Water Association-High Plains chapter for 25 years. Kevin was named the 2021 McEllhiney Distinguished Lecturer by the National Ground Water Association and Groundwater Foundation.

**Date:** Tuesday, December 5

**Time:** 02:45 PM - 03:45 PM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Mud Testing - How Important Is It?

**Course Description:** Is onsite testing important? Typically, when contractors contact us, it's because they have a problem or are expecting some difficulty. Having some basic mud / water testing information is the only way we can provide meaningful help over the phone. I find when contractors understand what the testing numbers mean they are much more willing to do the basic testing. This discussion goes into the testing procedures that they can do themselves with little investment in time or equipment as well as the more in-depth testing that is performed by a drilling fluids specialist. We will discuss the units of measurement for each test and the trends we look for both positive and negative. The goal is to not to make mud engineers out of every drilling contractor but to give a basic understanding of the language so we can all discuss test results and plan what we can do to address a problem or hopefully prevent one. This presentation is for drilling contractors of all experience levels.

**Presenter:** Stewart Krause, Wyo-Ben, Inc.

**Presenter Biography:** Stewart has a long history in the drilling fluids and grouting industry while working for Wyo-Ben 40+ years. Starting in the oil & gas side of the business then moving to small drill and environmental sales. Holding many titles over the years from technical field support, product development, sales manger and product manger. Stewart teaches many continuing education classes each year on both grouting and drilling fluid applications.

**Date:** Tuesday, December 5

**Time:** 02:45 PM - 03:45 PM

**Room:** N219/N222

**Category:** Drilling Operations & Well Construction

**Title:** Dual Rotary Drilling in Water Wells and Geothermal Boreholes

**Course Description:** Drilling water wells and geothermal boreholes can be a complex task, but using dual rotary drilling can make the process much easier. Dual rotary drilling is well-suited to both geothermal, water well and exploration projects, where accuracy (straightness of the borehole), speed, and flexibility of the drill

are key. With dual rotary drilling, the top and lower drives can be adjusted and controlled easily, allowing for a variety of options when drilling through different terrain types. The drills have high torque capabilities and the ability to reach depths of over 500 feet, ensuring that all kinds of wells and boreholes can be constructed with ease. This makes it perfect for any project that needs precision drilling at depth or where clean dry gravel or boulders are expected. Our experience using dual rotary drilling in water wells and geothermal boreholes has shown impressive results in terms of efficiency and accuracy. Additionally, its versatility allows for a variety of drilling methods, such as mud rotary, air-rotary, and down-the-hole hammer. Overall, dual rotary drilling offers the perfect solution when it comes to constructing water wells and geothermal boreholes. Its adjustable speed and torque capabilities make it incredibly efficient while still providing straighter boreholes, and the ability to see the formations quicker and easier. With its versatility in different drilling techniques and deep reach capabilities, dual rotary drilling is the perfect choice for any kind of project.

**Presenter:** Derek McGladdery, Derex Inc

**Presenter Biography:** Derek McGladdery has been in the groundwater and drilling industry since 1986, but helped on the drills since 1981 as a kid. Derek is a licensed well driller in Canada and worked in the 90's to bring grouting requirements in the province he lived. During the many decades of drilling Derek developed many different techniques for saving time drilling water wells, geothermal and exploration boreholes. Using his experience Derek has designed and is building drilling rigs that are made to last a lifetime and be super profitable for the drillers.

**Date:** Tuesday, December 5

**Time:** 02:45 PM - 03:45 PM

**Room:** N223/N226

**Category:** Water Systems

**Title:** Optimize Irrigation Jobs: Tips & Expert Insights for Selecting the Best Pumping Solution for the Application

**Course Description:** In the world of agriculture, where and how customers get water are critical to production. From drilled wells to wet wells...from centralized water sources to water collection and recycling, farmers and operators need to get water from the best and closest sources possible. During this training, we'll explore how pumping solutions are designed to optimize the water systems of ag and irrigation applications – including the latest technologies available and the overall irrigation needs of the agricultural operation. Join the experts as you learn what to consider when recommending a solution to replace or install a new pumping system to meet water availability concerns, shifting needs or changing landscapes.

**Presenter:** Joe Chiarella, Franklin Electric

**Presenter Biography:** Joe Chiarella joined Franklin Electric in March 2023 as a Business Development Manager focused in the Agriculture & Irrigation market and serves the Eastern half of the United States. He brings 33 years of sales management experience to the role, including time in the industrial sales sector focusing on motor and variable speed control applications. Joe has a proven track record of developing customer relationships and putting customer success first. In his spare time, Joe oversees a 501c(3) charitable organization and is a lacrosse coach and official.

**Date:** Tuesday, December 5

**Time:** 04:15 PM - 05:15 PM

**Room:** N115/N117

**Category:** Business Management

**Title:** Winning Your Brand's Key Moments of Truth to Grow Your Business

**Course Description:** For every brand and business, there are critical moments of truth that determine if your target customer will choose you, choose a competitor, or walk away. It doesn't matter if you're a contractor, a distributor, or a manufacturer. All brands and businesses must face and win these critical moments of truth. Through this thought-provoking session, attendees will learn the key moments of truth that every brand or business faces. Then, leveraging the presenter's deep expertise leading brands in a wide variety of industries, he will show you tips and ways to increase your brand's chances of winning and delighting your target audience.

**Presenter:** David Bernardino, Ammunition

**Presenter Biography:** David is the Chief Growth Officer at Ammunition, a full service advertising agency focused on supporting brands navigating long-term selling environments, with complex paths to purchase — among both B2B and B2C audiences.

**Date:** Tuesday, December 5

**Time:** 04:15 PM - 05:15 PM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** A Bits a Bit, but Is It?

**Course Description:** We are going more in depth to bits than ever before. This presentation will cover ground formations, bit warranties, trouble shooting and how to save money on your next job. I will be discussing bit design and how that can help drillers with cost per foot and better performance. We will discuss different bits on the market and how and when to use those bits in differing formations.

**Presenter:** Latisha Shipman, Drilling Equipment Resources

**Presenter Biography:** Latisha Shipman is the Texas Branch Manger for Drilling Equipment Resources. She has 20 years plus experiences in the drilling industry including her start with a major hammer and bit manufacture. She has grown over the last year to not only an expert in DTH but in being a true resources for customers across the drilling industry.

**Date:** Tuesday, December 5

**Time:** 04:15 PM - 05:15 PM

**Room:** N219/N222

**Category:** Safety & Compliance

**Title:** Safety & New Hires - Injuries That Can Impact a Business Legacy

**Course Description:** During this session, participants will learn the importance of safety training for new hires and the associated impacts of employees willingly or unwillingly committing an unsafe act. We will discuss

behavioral psychology and statics of safety conditions specific to construction sites. The financial and legal ramifications of repetitive stress injuries and willful violations that can lead to criminal court will also be discussed.

**Presenter:** Brock Yordy, The Driller - Venture Drilling Supply - MGWA - NGWA - IGSHPA - Geothermal Rising - NY GEO

**Presenter Biography:** Brock Yordy is a 3rd generation driller and an industry educator. He has worked as SME and drill trainer on water and geothermal drilling projects worldwide for large companies, NGOs, and the US Military. His passion is sharing knowledge and inspiring men and women to join the drilling industry. Brock accomplishes that by writing, teaching, training, and broadcasting. You can find his work at Driller.com in Ask Brock, The Driller Newscast, and multiple podcasts.

**Date:** Tuesday, December 5

**Time:** 04:15 PM - 05:15 PM

**Room:** N223/N226

**Category:** Water Systems

**Title:** Pump Panel Electrical Installation and Maintenance, Soft Starting and Stopping

**Course Description:** Gradual starting and stopping of pumps improves performance, reduces wear and tear, and extends the life of equipment. This workshop will provide you with knowledge of motor controls, how to select the properly sized soft starter system, plus installation and maintenance procedures. From the incoming three phase power to the outgoing motor connections, we will cover electrical standards such as wire sizing, bend radius, and torque settings. On the maintenance side, we will cover what is needed to keep your pump running, prolong the lifetime of your motor, and optional monitoring features. Target audience are those who are responsible for the electrical side of groundwater pump system.

**Presenter:** Mark Berger, Siemens Industry, Inc.

**Presenter Biography:** Mark Berger has been with Siemens for 19 years and is currently part of the Industrial Market Development Group for circuit protection and controls. Prior to working at Siemens, Mr. Berger was a controls/instrumentation engineer for 10 years. He has a B.S. in Applied Physics from Weber State University.

**Date:** Wednesday, December 6

**Time:** 11:00 AM - 12:00 PM

**Room:** N115/N117

**Category:** Water Systems

**Title:** Electrical Basics and Tips For Water Systems

**Course Description:** Attendees will learn about the basics of electricity as it relates to the Water Systems industry including the hydraulic analogy, supply, nameplate information, surge protection, cable selection and use of meters. Knowledge of electrical basics is critical for personal safety as well as proper installations and troubleshooting. Understanding how meters work, proper use and care are critical skills necessary for efficient and effective troubleshooting.

**Presenter:** Tom Stephan, Goulds Water Technology

**Presenter Biography:** Thomas Stephan manages Xylem's Residential and Commercial Water and Seneca Falls training programs. This includes external customers, sales force and other employees. He is responsible for research, development and implementation of web-based on line training.

**Date:** Wednesday, December 6

**Time:** 11:00 AM - 12:00 PM

**Room:** N119/N120

**Category:** Well Maintenance & Rehabilitation

**Title:** Water Well Disinfection and Rehabilitation

**Course Description:** We will discuss the importance of new well disinfection as it relates to older well rehabilitation. Attendees will learn about how to disinfect new wells, how to do the math to make sure you can get to the contamination, and the benefits of using a larger biocide treatment to not only disinfect but to remove any mud damage that might have occurred while drilling the well. If wells are properly disinfected and follow a minimal maintenance schedule, many of the problems we have encountered through the rehabilitation process can be avoided. Not allowing a bacterial colony to grow and flourish eliminates the need for premature and costly equipment replacement, loss of water at crucial times, and hours of mechanical work needed to correct the issues.

**Presenter:** Donald Teeters, Continental Technologies Inc

**Presenter Biography:** Don Teeters is the founder of Continental Technologies, Inc, a company specializing in a trifecta of water well products known as Redi Clean. Don started his career in the oil business in 1977 as an owner/operator of producing oil wells in Kansas. In 1991, he formed CTI, and began commercially designing treatment recommendations and rehabilitating water wells. He is a consultant to industry professionals all over the country and is widely known for his ability to find solutions for the rehabilitation of problem wells. Don has been a licensed Kansas water well contractor since 1995 specializing in water well rehabilitation. He has done numerous seminars for state water well associations as well as on site trainings. Don's knowledge of rehabilitation has led to recommendations implemented by hydrologists and engineering firms from coast to coast.

**Date:** Wednesday, December 6

**Time:** 11:00 AM - 12:00 PM

**Room:** N219/N222

**Category:** Drilling Operations & Well Construction

**Title:** Ever Changing and Essential Saga of Well Development in the Field

**Course Description:** Proper development remains an essential yet often misunderstood and misapplied aspect of well construction. Development defines whether a well will be a resource or a challenge over its operational life. With challenges in supply and labor over the past several years, improper development challenges have increased. The session will look at the role of development, the methods of development, challenges historically and challenges post-COVID. The session will also include guidelines for monitoring development, recommendations for pre-construction specifications, and means of identifying poor development once the well is in operation.

**Presenter:** Michael Schnieders, Water Systems Engineering, Inc.

**Presenter Biography:** Michael (Mike) Schnieders is the lead hydrogeologist and president of Water Systems Engineering, Inc., a diagnostic laboratory and consulting firm in Ottawa, Kansas. Mike received his Bachelor of Science Degree in Geology from Kansas State University and a Master of Science in Geology from Wichita State University. Mike is a Registered Professional Geologist and a Professional Hydrologist with a distinction in groundwater. Mike co-authored the Operational Stage of the Well with Thom Hanna and John Schnieders. Mike has authored numerous technical papers on water resources, well fouling, and water testing. Mike was the National Ground Water Association's 2017 McElhiney Distinguished Lecturer in Water Well Technology.

**Date:** Wednesday, December 6

**Time:** 01:00 PM - 02:00 PM

**Room:** N115/N117

**Category:** Water Systems

**Title:** Best Practices for a Submersible Pump Install

**Course Description:** Are you new to the industry or want to freshen your skills? In this discussion, we will review the best pump installation practices. Starting off with understanding the well and more importantly how to manage a low yielding well should you encounter one. We will explore the questions: What pieces and methods make for a proper submersible pump install? Why is good splicing important? Do you test your connections and how? And what are common wire issues in the system? Do you evaluate the pump itself before installation? Do you know the key differences between a CSCR box and CRIR box? Can a Variable Speed Drive solve all issues? What are common issues sizing a tank? Does the system have a good health check? All these will be reviewed as well as the changes in the industry that can make your job both seem harder, and at times easier. Pumps have not changed significantly in our industry over the years. Technology is the future from how we manage a low yielding well, to testing and tracking the pump. Monitoring and controlling the pump have changed rapidly in our industry. Are the best practices of yesterday applicable today?

**Presenter:** Daniel Featherstone, Pentair Flow Technologies

**Presenter Biography:** Dan has been working with Pentair for over 23 years and training for over twenty. Experience includes a variety of pumps from the standard centrifugal and submersibles to vertical multistage and vertical line shaft turbines and more. This includes residential, commercial, and agriculture installations and variable frequency drives. Dan also has experience in sump, sewage, and effluent pump and applications. Much of Dan's experience has been learned firsthand growing up on the family farm where he still lives in Walworth Wisconsin with his wife of 31 years and one son. Dan holds a bachelor's degree in business management. Training experience ranges from classroom training as well as webinars and e-learning.

**Date:** Wednesday, December 6

**Time:** 01:00 PM - 02:00 PM

**Room:** N119/N120

**Category:** Well Maintenance & Rehabilitation

**Title:** Keep It Simple Well Rehab

**Course Description:** 80% of water well problems fall into mineral incrustation, biofouling, physical plugging, and pump damage. Simple approaches to treating the most common water well "fouling conditions" will be discussed from bentonite drilling fluid screen fouling to treating iron and scaling. Determining when it is a case for water well rehabilitation vs. drilling a new well is a target point in this presentation. The industry segments (residential, public, etc.) and contractor proactive income opportunity streams will also be presented.



**Presenter:** Todd Tannehill, Minerals Technologies, Inc.

**Presenter Biography:** Based out of Northeast Ohio, Todd Tannehill is the Northeast/Mid-Atlantic Technical Sales Manager for the Drilling Products division of CETCO. Todd has been with CETCO since 2005; he is well-known in the industry for providing strong technical support to contractors, distributors, and engineers. He is responsible for territory management, technical education, new business development, and contractor/distribution support for the Northeast and Mid-Atlantic United States. Prior to this role, Todd held many positions within the CETCO organization; his previous was Vice President of CETCO Drilling Products, a position he assumed in 2014. He proudly served in the United States Navy; after two tours of duty and his honorable discharge, he earned a B.S. in Business Administration from Eastern Nazarene College in Quincy, MA., he has his CTM from Toastmaster International and is a past Board Member of the National Ground Water Association.

**Date:** Wednesday, December 6

**Time:** 01:00 PM - 02:00 PM

**Room:** N219/N222

**Category:** Safety & Compliance

**Title:** Health & Safety Around the Well Drilling Site

**Course Description:** Our familiarity with water well drilling work sites may sometimes make us complacent about the potential hazards in that working environment. Drilling sites typically expose workers to an assortment of potential dangers, including slippery and uneven working surfaces; heavy equipment and machinery that is constantly operating to move heavy loads; inclement weather and (sometimes) long work hours; confined spaces between closely-positioned vehicles or within sound barriers. This workshop will provide pragmatic, real-world examples of the potential risks at drilling sites, and sound recommendations for a safe workplace.

**Presenter:** Marvin Glotfelty, Clear Creek Associates, a Geo-Logic Associates Company

**Presenter Biography:** Marvin Glotfelty, R.G. is a Principal Hydrogeologist with Clear Creek Associates (a Geo-Logic Company). He is a Professional Geologist in CA & AZ and a Licensed Well Driller in AZ, with over 40 years of experience in the design, installation, rehabilitation, or decommissioning of about 1,000 water wells in the southwestern United States. In 1995, he received the City of Phoenix Mayor's Environmental Award for his work with rehabilitation of municipal wells, he was the NGWA's Distinguished McElhiney Lecturer in 2012, and he was the 2021 recipient of the Arizona Hydrological Society's Lifetime Achievement Award. He has authored over 30 publications, including The Art of Water Wells (NGWA Press, 2019) and Glossary of Driller's Terms (NGWA Press, 2004). He also contributes quarterly articles to NGWA's Water Well Journal in his The Art of Water Wells column, and he has done more than 40 videos on water well topics for NGWA's Industry Connected video series.

**Date:** Wednesday, December 6

**Time:** 02:30 PM - 03:30 PM

**Room:** N115/N117

**Category:** Water Systems

**Title:** VFD's - Did You Know?

**Course Description:** This presentation will bring greater understanding to many things never considered before with respect to VFD's and pump systems. We will discuss when and where output filters are necessary for the long term health of your motors. We will discuss how you can still short cycle equipment even though you are using a VFD and the consequences thereof. We will learn how surge protection works and where grounding plays a major role in the effectiveness of surge protection. I will walk the class through tools that are necessary for success with VFD's and discuss with them how a "default" is not always their best solution.

**Presenter:** Jeremy McBride, Phase Technologies

**Presenter Biography:** Jeremy earned a business degree from AIU in 2007, which is also the year he purchased and became the managing partner of Scruggs Incorporated, a water well drilling, pump, and rental business in East Texas. After selling out in 2015 and moving back to East Texas, he became a branch manager for a wholesale pump and supply company where he worked for the next 5 years before his move into manufacturing with Phase Technologies. Jeremy is currently the Vice President of Sales & Marketing but has worked as both a Territory Manager and National Sales Manager with Phase Technologies. While at Phase he has also developed Phase University, the instructional arm of Phase Technologies, which has become a significant resource for contractors and distributors alike to learn about the practical application of VFD's from a teacher that has their same experiences.

**Date:** Wednesday, December 6

**Time:** 02:30 PM - 03:30 PM

**Room:** N119/N120

**Category:** Well Maintenance & Rehabilitation

**Title:** Aqua-Scopic Well Rehabilitation

**Course Description:** Today's latest technology of a video rehabilitation camera for videoing all water wells that are known or suspected to have an encrustation problem is here. The latest cameras will give you a sharp video picture, water temperature at the camera head, TDS, and a litmus test for PH. But then what do you do with the poor visibility/cloudy water? Since there is no reasonably priced camera that can see through dirt, your only other recourse is to use one of several flocking agents on the market approved for domestic water well use. This seminar will address some of the following video inspection problems, including: several different techniques to address suspended solids and seeing in "cloudy water," NSF approved flocking agents, lighting issues, and marketing your camera and company as a new source of profit.

**Presenter:** Raymond Roerick, WELLVU CAMERA

**Presenter Biography:** Ray joined the Air Force after high school, served in Vietnam, after 8 years serving his country, Ray decided that shoveling mud pits was his future. Didn't take long for him to decide to start Arrowhead Well & Pump, operating 3 drilling rigs, pump rigs and installed 450-550 wells & water systems per year. From there to working as a manufactures rep for several years with Midwest Well Supplies, Fairbanks Morse Pumps, State Tanks and water treatment equipment, soon opening and managing a Water Well wholesale house in MN. After a few years he moved to Montana to take the position of Sales Manger for 2M Companies. Shortly thereafter relocated to Eastern MT and started a Pump Instillation and gas/coal field Drilling Consultant. During his well repairs and consulting he found a huge need for an inexpensive down hole video camera and worked the worlds largest underwater camera manufacture, the Aqua Vu, and developed the WellVu camera now with more than 2 million underwater cameras.

**Date:** Wednesday, December 6

**Time:** 02:30 PM - 03:30 PM

**Room:** N219/N222

**Category:** Sustainable & Available Groundwater

**Title:** Sieve Analysis, Slot Size, and Gravel Pack Selection

**Course Description:** The purpose of this presentation is to provide an understanding of the relationship of the sieve analysis, the gravel pack, and the screen slot size. The presentation will discuss the details of sample collection, the sieve analysis process, the interpretation of the results, gravel pack selection, and screen slot sizing. Understanding these details will help both the drillers and the engineers in selecting the right combination for an efficient well with minimal sand production.

**Presenter:** Jeremy Kuhn, Roscoe Moss Company

**Presenter Biography:** Jeremy Kuhn is a Director at Roscoe Moss Company. Jeremy has worked in the Water Well industry for over 20 years, starting as a rig hand. He has held rolls as a Driller, Safety and Personnel Manager, Operations Manager, and Business Development. Jeremy is currently the VP of the Manufacturing Section of the National Groundwater Association. In addition to serving on the NGWA Board, he is also a board member for the American Ground Water Trust, the Arizona Water Well Association, and the Mountain States Groundwater Association.

**Date:** Thursday, December 7

**Time:** 08:00 AM - 09:00 AM

**Room:** N115/N117

**Category:** Well Maintenance & Rehabilitation

**Title:** Laboratory Evaluations of Well Fouling for Corrective Action

**Course Description:** Water wells are susceptible to a variety of individual and combined fouling mechanisms. Understanding the specific reasons why a well has fouled or is experiencing reduced efficiency are key to developing the correct response. Biofouling, corrosion, pore development, mineral scale build-up, formation influence, are all common fouling issues that impact potable wells. The occurrence and frequency of common fouling mechanisms will be discussed with information derived from an active, investigative laboratory. The session will explore the root cause of well fouling and share rates of occurrence on specific issues that commonly impact well systems. This information will then feed into a discussion on choices for maintenance, rehabilitation, or disinfection.

**Presenter:** Michael Schnieders, Water Systems Engineering, Inc.

**Presenter Biography:** Michael (Mike) Schnieders is the lead hydrogeologist and president of Water Systems Engineering, Inc., a diagnostic laboratory and consulting firm in Ottawa, Kansas. Mike received his Bachelor of Science Degree in Geology from Kansas State University and a Master of Science in Geology from Wichita State University. Mike is a Registered Professional Geologist and a Professional Hydrologist with a distinction in groundwater. Mike co-authored the Operational Stage of the Well with Thom Hanna and John Schnieders. Mike has authored numerous technical papers on water resources, well fouling, and water testing. Mike was the National Ground Water Association's 2017 McElhiney Distinguished Lecturer in Water Well Technology.

**Date:** Thursday, December 7

**Time:** 08:00 AM - 09:00 AM

**Room:** N119/N120

**Category:** Business Management

**Title:** Preparing to Sell or Hand Over Your Business

**Course Description:** The goal of this session is to help business owners and families plan for the future: a time when they may want to retire, sell their business, or pass their business on to their employees or family members. The session covers options when looking to retire, how to prepare your business for the best outcome, and common challenges throughout the sale process. The seminar provides an overview of the opportunities to pass on your business. These include sale to a neighboring business or competitor; sale to an investment group; employee stock ownership plans (ESOPs); passing the business to a family member; or closing and auctioning off assets and equipment. Preparing your business for a sale, ESOP, or handover will also be discussed. Specifically, practical advice on preparing your books, retaining an accountant and legal counsel, interviewing business brokers and ESOP consultants. It will also cover the main elements an investment firm or neighboring business will look for if they are considering a purchase, e.g., consistent growth, strong margins, high-quality talent that will be staying with the company. The workshop will include two business owners that have recently sold their business or completed an ESOP transaction to share the benefits and challenges of each strategy with the audience and be available for questions.

**Presenter:** Amanda Neilson, Axia Water

**Presenter Biography:** Amanda is the CEO of Axia Water, a company that invests in locally-owned groundwater businesses to help them reach their fullest potential. Amanda holds an MBA from Stanford Graduate School of Business and is a qualified Australian lawyer. Born on a farm near Canberra, Australia, Amanda understands the critical role groundwater plays in the daily lives and businesses of Axia customers. At Axia Water, Amanda is focused on partnering with strong local businesses and providing the right tools, people and resources to enable them to enter their next chapter of growth.

**Date:** Thursday, December 7

**Time:** 08:00 AM - 10:15 AM (2 hour course with 15 minute break)

**Room:** N219/N222

**Category:** Drilling Operations & Well Construction

**Title:** Determination of Slot Size From Sieve Analysis Data

**Course Description:** This is a two-part class with a lecture and student problem. The class will cover the proper selection of slot size and filter pack for a water supply well. Basic design parameters will be discussed including types of well completions both natural developed and filter packed wells. Instruction will be given in the basic screen-design parameters, filter packs and selection of filter pack and slot size.

The second part of the class will include a problem that will be completed as part of the class where the students will get to design a filter pack and screen slot size for the Millerville well. Information will be given about the capacity of the well that is required, aquifer sieve data and general information required to design a filter pack and slot size. Students will plot the data and select a proper design for the screened interval.

**Presenter:** Thomas Hanna, Johnson Screens

**Presenter Biography:** Thomas Hanna is the Technical Director for Johnson Screens where he works in areas of well design, construction and rehabilitation. He received his Bachelor of Science Degree in Geology from Michigan State University and Master of Science Degree in Geology from Western Michigan University. He is a Register Professional Geologist in the states of Arizona, Kentucky and Wyoming.

**Date:** Thursday, December 7

**Time:** 09:15 AM - 10:15 AM

**Room:** N115/N117

**Category:** Drilling Operations & Well Construction

**Title:** Grouting and Well Abandonment-Methods and Materials

**Course Description:** This workshop will discuss methods and materials used in well grouting and the well abandonment process. The best methods and materials, such as the different cement and cement bentonite mixes, to use as well as instruction on a variety of casing types will be highlighted. Attendees will walk away knowing the proper way to perform a well abandonment job with a permanent, safe seal.

**Presenter:** James Hutmacher, Wyo-Ben, Inc.

**Presenter Biography:** I graduated from Chamberlain High School and attended the University of South Dakota. I returned home and began my well drilling career. I started attending state conventions and NGWA shows. I obtained my CWD in 1986 and my PI in 1994. I started with Wyo-Ben in 2016 as a Sales Engineer covering eight states. I do many classes for state associations and distributors. I also do field trouble shooting for customers on site. I have done educational seminars for NGWA also.

**Date:** Thursday, December 7

**Time:** 09:15 AM - 10:15 AM

**Room:** N119/N120

**Category:** Business Management

**Title:** 2023 State of the U.S. Water Well Industry Report

**Course Description:** What a time to be in this industry! With record demand, unprecedented challenges, and an unpredictable world, things look very different today than a couple of years ago. This presentation on the State of the U.S. Water Well Industry is based on 886 responses to the State of the U.S. Water Well Industry survey conducted December 2022 – January 2023. The report gathers contractors and supplier perspectives on the current challenges, opportunities, and trends within the water well industry. It is in this environment that The Water Systems Council has embarked on its second annual State of the U.S. Water Well Industry Report. The intent is to give business leaders access to information, benchmark data, and insights that will help them make decisions and capitalize on opportunity. At the same time, this report gives a voice to those in the industry and educates those outside of our industry on who we are and why what we do is so important. Survey respondents were asked to weigh in on their industry outlook and what's driving it, regulation, environmental factors, technology, investment, and COVID impact. In addition, survey respondents shared information on themselves and their business that presents a clear view of the industry make-up. The insights derived from diverse industry respondents on a wide range of topics are intended to fuel strategic discussions and facilitate decision-making within well contractors and suppliers' business.

**Presenter:** Margaret Martens, Water Systems Council

**Presenter Biography:** Margaret Martens is Executive Director of the Water Systems Council (WSC), a national nonprofit organization solely focused on household wells and small water well systems. In addition, she serves as Executive Director for the Water Well Trust, WSC's national nonprofit helping Americans get access to a clean, safe water supply. Martens areas of expertise include non-profit organization development and strategic planning, programs development and implementation, marketing and public education, fundraising, financial management, grants management, and policy development at the state and federal levels. Martens has over 30 years of nonprofit experience. Prior to joining WSC in 2010, Martens was Event Manager for the

Town of Davidson, NC and Project Manager for Downtown Davidson Inc. She is the co-founder of two nonprofit organizations in the Charlotte, NC area.

**Date:** Thursday, December 7

**Time:** 10:30 AM - 11:30 AM

**Room:** N115/N117

**Category:** Water Systems

**Title:** Improving the Efficiency of Irrigation Pumping Systems through Pump System Optimization

**Course Description:** With over 600,000 pumping systems used for irrigation on agricultural land in the United States, there is a great opportunity to save energy. Improving the efficiency of agricultural irrigation pumping systems can save up to 22 billion kilowatt hours of energy per year and eliminate 8.3 million metric tons of carbon emissions annually. Considering potential funding opportunities with the passing of the Farm Bill, improving the efficiency these pumping systems will be more affordable, and the energy reduction can save producers millions of dollars annually, and provide meaningful reductions in carbon emissions. The Hydraulic Institute (HI) and their Educational Foundation Pump Systems Matter (PSM) designed the Pump System Optimization (PSO) course to bring awareness of the opportunity to save energy in pumping systems and teach the fundamental techniques to follow. This training session will cover the fundamentals of pump curves, system curves, their interaction, how the pump system consumes energy and ways to improve efficiency. Additionally, the training will focus on irrigations systems and how to identify opportunities for optimization and examples of optimized irrigation systems. Attendees will walk away with improved knowledge that they can use to sell the upgrade of irrigation systems through improved life cycle cost.

**Presenter:** Matthew Derner, Hydraulic Institute / Pump Systems Matter

**Presenter Biography:** Matthew Derner is the Manager, Business Development, Education and Training Resources. He holds a leading role in promoting pump system related programs that deliver energy efficiency in commercial and industrial settings. Additionally, he is responsible for managing Pump Systems Matter (PSM), HI's training subsidiary, and for the overall promotion and growth of the Hydraulic Institute's portfolio of training and certification programs that focus on pump system optimization, and efficiency. Matthew has a strong background in global sales of pumps, drives and various rotating equipment in both the manufacturing and distribution segments, with an emphasis on energy efficiency and total cost of ownership.

**Date:** Thursday, December 7

**Time:** 10:30 AM - 11:30 AM

**Room:** N119/N120

**Category:** Drilling Operations & Well Construction

**Title:** Passing on Knowledge to the Next Generation Roundtable

**Course Description:** Listen and participate in an important discussion about recruiting and training the next generation of employees. As long-time groundwater professionals are retiring in the coming years, it is critical their industry expertise and knowledge is passed on. But what is the best way to do so? That will be discussed as well as what critical information should be passed on, lessons learned from long-time industry veterans, and what many professionals wish they knew early in their groundwater careers.

**Moderator:** David Henrich, Bergerson-Caswell Inc

**Presenter Biography:** Mr. Henrich started working for Bergerson Caswell in 1993. During the course of his service Mr. Henrich has gained experience in many areas of water well drilling, pump installation, environmental drilling and sampling, and geothermal design and construction. Currently, Mr. Henrich is the President of Bergerson Caswell, is the president of Thermal Dynamics, and is a vice-president at Precision Geothermal. His responsibilities include managing the operations of three companies, designing geothermal systems, managing and training personnel, implementing the procedures for constructing ground source systems, software technical support, sales and marketing.

**Date:** Thursday, December 7

**Time:** 09:15 AM - 10:15 AM

**Room:** N101/N103

**Category:** Managed Aquifer Recharge

**Title:** Evaluating Aquifer Recharge for Generation Opportunities

**Course Description:** Aquifer recharge offers a unique opportunity to generate electricity using existing infrastructure and significantly reduce operating costs. Water well motors typically consume electricity to pump water to the surface. If the process is reversed, water is injected through the well into the aquifer, the well motor operates as a generator, producing electricity.

This session will cover how to evaluate an aquifer recharge project for generation potential - determining the efficiency of existing well motors, evaluating aquifer conditions for direct injection recharge, estimating generation potential, deciding what additional hardware (electrical components) are needed. A summary of regulatory and permitting issues, utility interconnection requirements and tariff evaluations, and operating considerations will be presented. Attendees will leave with knowledge on how to evaluate these opportunities, determine what additional hardware is needed for their project, how to get the project permitted and approved, and how to determine the economics of this opportunity.

The presenters of this session have evaluated and installed aquifer recharge generation projects in Oregon and California, and were selected by the California Energy Commission for a multi-year demonstration and evaluation of the technology as a potential long duration energy storage technology.

**Presenter:** Lon House, Water and Energy Consulting

**Presenter Biography:** Dr. House is founder and owner of Water and Energy Consulting. He taught engineering at U.C. Davis for a number of years and is co-director for the U.C. Davis Renewable Energy Institute. He was the chief utility planner for the California Public Utilities Commission. He has been the energy advisor for the Association of California Water Agencies, California Rural Water Association, Rural Water Association of Arizona, and National Rural Water Association.

**Date:** Thursday, December 7

**Time:** 08:00 AM - 09:00 AM

**Room:** N101/N103

**Category:** Groundwater Remediation

**Title:** PFAS in Groundwater: What's Now and What's Next

**Course Description:** Per- and Polyfluoroalkyl substances (PFAS) have been in use in the United States since before the 1950s in a wide variety of consumer and industrial products. PFAS has been linked to various health problems, including some cancers. Estimates now suggest that PFAS are present in the blood serum of nearly

all Americans. In the early 2000s, as testing methods became available, investigations focused on PFAS manufacturers such as 3M and DuPont, as well as users of aqueous film-forming foams (AFFF), which are used to extinguish fuel fires. In 2000, manufacturers began to phase out the long-chain PFAS in products, substituting shorter-chain PFAS. However, it soon became apparent that the short-chain PFAS posed similar health risks. A well-known example is GenX, a short-chain PFAS created by DuPont as a “safer” alternative to Teflon. In 2016 a team from North Carolina State University (NCSU) identified the GenX in the Cape Fear River, a drinking water source for eastern North Carolina. But the contamination was not limited to surface waters. GenX was detected in drinking water well samples. A study by NCSU and the North Carolina Department of Environmental Quality found that the source of the groundwater contamination was GenX air emissions. In 2016, the EPA issued a Lifetime Health Advisory for two widely detected PFAS; PFOA and PFOS. Five years later, in October 2021, EPA announced the PFAS Strategic Roadmap that set timelines for taking specific actions with a commitment to bolder policies to safeguard public health, protect the environment, and hold polluters accountable. In May 2022, EPA released Regional Screening Levels (RSLs) for PFOA and PFOS in groundwater, and in March 2023, EPA announced the proposed National Primary Drinking Water Regulation (NPDWR) for six PFAS.

We will discuss current guidelines and interim recommendations from EPA, remediation technology, and PFAS-contaminated media disposal.

**Presenter:** Candy Elliott, SCS Engineers

**Presenter Biography:** Ms. Elliott is a licensed professional geologist in North Carolina. She holds a BS in Geology and an MS in Geophysics. She has worked on a wide variety of environmental projects including groundwater assessment and remediation, environmental justice reviews, RCRA Hazardous Waste sites, and deep injection well projects. She has managed PFAS projects related to GenX and AFFF drinking water well contamination as well as PFOA community supply well contamination.



**Date:** Thursday, December 7

**Time:** 08:00 AM - 08:00 AM

**Room:** N107/N108

**Category:** Geophysical Techniques & Applications

**Title:** Introduction to Using Resistivity for Securing and Maintaining Sustainable Water Resources

**Course Description:** Geophysical methods have been a part of subsurface exploration for well over 100 years. Key to success is identifying an appropriate technology that will respond to the presence of your target material – in other words be able to differentiate between the feature(s) of interest and the host material.

For groundwater, the resistivity of the subsurface is the most commonly measured parameter. In this workshop we look at three approaches to mapping resistivity as an indicator of the presence of groundwater and how it can provide an early indication of its quality. The session will focus on Electrical Resistivity survey in two forms (1D VES and 2D/3D imaging) and Transient Electromagnetic survey (TEM).

The workshop serves as an introduction to these methods, looking at the basic underlying principles of the techniques, and highlighting how this defines the advantages and disadvantages of the three approaches. The session will show how different generic system configurations will define the likely resolution, sensitivity and depth capability of a given survey. A short time will be spent on discussing where variations in chargeability (from induced polarisation effects) arise and can be detected, and how this can be a valuable secondary dataset in groundwater exploration. The workshop will move on to how a user would get from raw instrument data to the real value stage – an interpreted model. The final part of the session will discuss the concept of monitoring existing groundwater resources and the considerations that should be made when planning for longer-term studies.

The workshop will close with an open forum for questions and discussion surrounding the application of geophysics to groundwater exploration, assessment and monitoring.

**Presenter:** Jimmy Adcock, Guideline Geo

**Presenter Biography:** Jimmy Adcock studied geophysics at undergraduate and master's degree levels and worked from 2002–2015 as a geophysicist, then senior geophysicist, at a UK survey company. Work covered diverse areas such as utilities, engineering, geology and archaeology; the latter included 10 years assisting with geophysics for the UK TV show Time Team. In 2015 he joined Global Support at Guideline Geo providing pre-sales and after-sales technical support, training, demonstrations and workshops, whilst also contributing to the R&D process for the ABEM and MALÅ product ranges. Most recently, Jimmy has taken over the role of Product Manager for the ABEM brand within Guideline Geo. Jimmy has worked extensively throughout Europe, Asia, Africa and the Americas for government agencies, universities, research institutes, NGOs and private companies. He previously sat on the European GPR Association committee, chaired the UK's ClfA Geophysics Special Interest Group and contributed to journals and conferences.

**Date:** Thursday, December 7

**Time:** 09:15 AM - 10:15 AM

**Room:** N107/N108

**Category:** Geophysical Techniques & Applications

**Title:** Nuclear Magnetic Resonance (NMR) Technology for Groundwater Investigations

**Course Description:** Nuclear magnetic resonance (NMR) is a powerful non-destructive and non-radiative methodology that is extensively used in a variety of disciplines, such as chemistry, medicine (MRI), and earth sciences. In groundwater geophysics, NMR allows direct detection of hydrogen in subsurface pore spaces.

The detected NMR signal allows quantitative determination of the saturated porosity and further indicates the pore size distribution and hydraulic conductivity of the pore space.

For decades, NMR logging tools were primarily employed in the oil industry and were not available for near-surface markets due to their extreme complexity, size, weight, and cost. In 2009, Vista Clara introduced the first groundwater NMR logging tool that could be transported in a small pickup truck and used to log groundwater wells of different diameters. Recently, man portable NMR tools have been developed for shallower groundwater investigations, including small diameter probes that can be deployed via direct push and CPT drill rigs, and “single-sided” sensors that can be placed on the ground surface and used to measure the properties of very shallow soils. Moreover, surface NMR that uses the earth’s geomagnetic field and surface coils provides a uniquely valuable methodology for non-invasive aquifer characterization. In this learning session we will cover the theory of NMR and its application to groundwater investigations. We will expose the audience to different NMR tools suitable for a variety of field and laboratory applications. We will present examples of different NMR-based tools and their applications for groundwater investigations in the groundwater resources, environmental remediation, geotechnical, and mining industries.

In summary, the audience of this session will gain a valuable understanding of innovative, highly sensitive, and currently available NMR technology for groundwater applications and their successive applications in a variety of earth science industries.

**Presenter:** Darya Morozov, Vista Clara Inc.

**Presenter Biography:** Darya Morozov, Ph.D., has 10+ years of experience focused on nuclear magnetic resonance (MR) in general and diffusion MR in particular.

**Date:** Thursday, December 7

**Time:** 10:30 AM - 11:30 AM

**Room:** N101/N103

**Category:** Geophysical Techniques & Applications

**Title:** What Geophysical Method and Why? The Right Tool for the Right Answer: Applied Geophysics for Groundwater Projects

**Course Description:** Groundwater management projects are becoming a critical tool to manage water supplies and mitigate drought around the world. An accurate and detailed understanding of the three-dimensional distribution of subsurface materials and their hydraulic properties is required for groundwater projects to execute projects efficiently and effectively. Obtaining this information solely by drilling methods is expensive and results in an incomplete site model with potentially detrimental data gaps.

Surface geophysical methods can be used as an effective tool to screen sites and direct subsequent exploration. Surface geophysical methods are faster, less expensive, more efficient, and provide higher data density and faster data coverage than traditional drilling methods. Geophysical data can be acquired in areas where drilling access is difficult such as environmentally sensitive areas, beneath water bodies, or on forested sites.

Different geophysical methods are sensitive to different physical parameters of the subsurface materials and have their own limitations based on the area of coverage, penetration depth, spatial resolution, and sensitivity to cultural interference. The proper geophysical method must fit the target and site.

Regional mapping methods, such as Airborne Electromagnetic Induction surveys, can cover large areas without the need to obtain site access. Ground based geophysical methods, including Electrical Resistivity Tomography, shallow seismic, and towed Time Domain Electromagnetic Induction systems can provide higher resolution images of the subsurface. Deeper looking methods, such as TEM and seismic reflection can be used for imaging up to thousands of feet deep.

Project examples will be given that illustrate the use of these methods on groundwater projects and discuss the when and why to use different methods based on site hydrogeology, resolution required (reconnaissance surveying versus high resolution surveying) and depth of investigation.

**Presenter:** Kristen Marberry, Collier Geophysics

**Presenter Biography:** Ms. Marberry currently works as a project hydrogeophysicist and a project geophysicist at Collier Geophysics, located in Lakewood, CO. Ms. Marberry has performed and overseen a wide variety of geophysical field investigations including seismic, ground penetrating radar, electrical, electromagnetic, IP, gravity and magnetic. She has experience in consulting projects from data acquisition, analysis, 2D and 3D graphical/visual displays of results, multi-source data integration, and report preparation. Ms. Marberry's professional passion is in the application of geophysics to groundwater resource management. She earned her M.S. degree in Hydrogeophysics, where her research focused on using geophysical techniques to characterizing subsurface hydrogeology.

**Date:** Thursday, December 7

**Time:** 10:30 AM - 11:30 AM

**Room:** N107/N108

**Category:** Managed Aquifer Recharge

**Title:** Decentralized Systems and Managed Aquifer Recharge (MAR)

**Course Description:** As many regions face a water supply crisis, decentralized systems can be one of the tools to offer a means to mitigate the depletion of water supply aquifers. Only 0.3% of earth's water is usable by humans therefore maintaining water onsite, close to its source has many environmental and public health benefits. This presentation will highlight the many benefits of onsite wastewater treatment systems and how they can be designed to provide Managed Aquifer Recharge.

**Presenter:** Dennis Hallahan, Infiltrator Water Technologies

**Presenter Biography:** Dennis F. Hallahan, P.E., Technical Director, has over 30 years of experience with the design and construction of on-site wastewater treatment systems. He has authored numerous articles for on-site industry publications and presents nationally on the science and fundamentals of decentralized systems. Dennis also oversees a department that is responsible for product research and testing. The department assists engineers in the design of large decentralized systems, some in excess of 1 MGD. Dennis has a MS in civil engineering from the University of CT and a BS in civil engineering from the University of VT. He has been with Infiltrator for over 20 years and, he is responsible for the technology transfer between Infiltrator and the regulatory and design communities. Dennis also holds several patents for on-site wastewater products. Member ASCE, WEF, NOWRA, has served as chairman of the NOWRA Technical Practices Committee and also serves on the NOWRA Educational Committee.